LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

AQUATIC VEGETATION CONTROL PLAN

CLEAR-SMITHPORT LAKE
DESOTO PARISH

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February 4, 2013

2013 Clear – Smithport Lake Vegetation Control Plan

LDWF, Inland Fisheries

1. Waterbody type – Impounded swamp created by inundation of two natural lakes, Clear Lake and Smithport Lake.
2. Age and condition of control structure– Smithport Dam was constructed by the Louisiana Department of Wildlife & Fisheries (LDWF) in January of 1948 at elevation 128 MSL. Louisiana Department of Transportation and Development (DOTD) archives show that several repairs and modifications have been made to the structure since that time. In May of 1953, a 100 foot "notch" in the original spillway was closed, raising the pool level from 128.6 MSL to 131.6 MSL. January, 1954-unspecified repairs to dam, $594. December, 1956- unspecified repairs to dam, $500. August, 1959-unspecified repairs to dam, $11,833. July, 1968-original timber stop logs were replaced by shop fabricated steel sluice gates. May, 1974-Repairs and improvements to dam and spillway including clearing and grubbing, clearing and chemical treatment, seeding and fertilizing, vegetative mulch, fencing w/ gate and gravel surfacing of road, $13,000. October, 1976-Improved outfall channel of Smithport Lake to Bayou Pierre. This improvement allowed for the discharge of water equivalent to the drawdown rate of 4 inches per day as recommended by Louisiana Wildlife and Fisheries Commission, $120,000.

   The condition of Smithport Dam and spillway is poor. Trees and other vegetation were present on the earthen dam in early 2012 but have since been cleared. Sluice gates are inoperable. The structure offers no drawdown capability at this time. Sluice gates are currently leaking. Logjams and debris are present on both the upstream and downstream sides of the structure.

3. Type of control structure –Smithport Lake Dam is a 1,800 foot earthen embankment with a 28 foot wide crown. The dam includes a 600 foot wide spillway made of wooden sheet piles with horizontal wooden crest boards. A photograph of the Smithport Lake Dam control structure appears in Figure 1.

Figure 1 Smithport Lake Dam control structure

4. Water level range - At pool stage -131.6 MSL; High-142 MSL; Low-127.6 MSL.
5. Surface area range – Pool-3,028 acres.
6. Average depth at pool stage is 4 feet.
7. Watershed ratio – 43:1.
8. Drawdown potential of structure –4 foot maximum potential at a rate of 4 inches per day. Currently, no drawdown capability is present due to the inoperative condition of the sluice gates.

9. Waterbody Board or Lake Commission – Clear Smithport Lake was originally governed by the Bayou Pierre State Game and Fish Commission created by Act 139 of 1934. Section 610 of the Louisiana Revised Statutes Title 36 (R.S. 36:610) abolished the Bayou Pierre State Game and Fish Commission and transferred their powers, duties, functions and responsibilities to the secretary of the Department of Wildlife and Fisheries. R.S. 36:610 also provides that any parish or parishes by formal resolution of the governing authority of each parish affected, pursuant to R.S. 56:721 may appoint a game and fish commission which may exercise those powers, duties and functions provided in R.S. 56:721 in relation to the game and fish preserves for which commissions are abolished by R.S. 36:610. Apparently, the commission was subsequently appointed by the DeSoto Parish Police Jury at some point. DeSoto Parish Police Jury meeting minutes show that recent members of the Bayou Pierre Game and Fish Commission (BPGFC) were appointed on August 10, 2009. Members of BPGFC are appointed by the DeSoto Parish Police Jury and serve until they resign or are removed. Current members of BPGFC are given as; Harlon Blackmon, Sims Calhoun, James Lindsay, Horace Wiggins, Jacque Dodd and Raymond Powell.

a. Primary contact information – The Bayou Pierre Game & Fish Commission can be contacted through the DeSoto Parish Police Jury, P.O. Box 898, Mansfield, LA 71052, (318)-872-0738.
b. Procedure for spillway openings – The board considers drawdown recommendations from the Louisiana Department of Wildlife and Fisheries (LDWF) or other entities. The board presents a resolution in favor of a drawdown to the Secretary of LDWF. Upon approval by the Secretary, the request is forwarded to Louisiana Department of Transportation and Development (DOTD) with specifics of gate operation, including dates for gate opening and closing and the target drawdown level.

A listing of historical drawdowns for Clear Smithport Lake appears in Table 1.

Table 1. Drawdown history of Clear Smithport Lake, LA.

DRAWDOWN HISTORY				
Date Opened	Date Closed	Purpose	Results	Issues
06/15/1959	Unknown	Weed Control	Unknown	
1964	Unknown	Weed Control	Unknown	None
June 1972	January 1974	Weed Control	Unknown	Recommended. No record of occurrence.
1973	Unknown	Weed Control	Good	None
1974	03/13/1975	Weed Control	Good	None
1978	Unknown	Weed Control	Good	None
09/08/1998	02/25/1999	Weed Control	Good	Gates clogged during drawdown resulting in higher than planned water levels. One gate was damaged and could not be closed on time.
08/01/2001	02/28/2002	Weed Control	Poor	Unauthorized gate closure was noted on 12/20/01.
07/15/2002	Unknown	Weed Control	Unknown	None
07/05/2007	01/31/2008	Weed Control	Good	None
06/16/2008	Scheduled for 01/29/2009 Gates were closed in November.	Weed Control	Good	Gates closed to allow water sales.

Although no drawdown is currently possible at this lake, LDWF has attempted to allow the spillway structure to operate as intended by clearing brush and debris from the structure and maintaining that cleared status throughout the year of 2012. The surface skimming effect resulting from this maintenance effort has resulted in at least periodic open water near the spillway area.

What significant stakeholders use the lake?
User groups for the lake include shoreline property owners, boaters, anglers, waterfowl hunters, the Bayou Pierre Game and Fish Preserve Commission and the DeSoto Parish Police Jury.

What are their needs and concerns?
The shoreline property owners, boaters, anglers and the lake commission are concerned with maintaining low vegetative coverage. Waterfowl hunters are concerned with adequate water levels to allow successful hunting. The police jury is concerned with adequate water levels to allow water sales.

What is the history of aquatic vegetation complaints?
Vegetation complaints at Clear Smithport Lake are chronic in nature and have been so for over 40 years. In years past, most complaints were related to water hyacinth *(Eichhornia crassipes),* duckweed *(Lemna sp.)* American lotus *(Nelumbo lutea),* pennywort (*Hydrocotyle spp.*), and a variety of submerged aquatic vegetation including hydrilla *(Hydrilla verticillata),* fanwort (*Cabomba caroliniana),* coontail *(Ceratophyllum demersum)* and bladderwort *(Utricularia sp.)* More recently, giant salvinia *(Salvinia molesta)* has generated the majority of vegetation complaints at Clear Smithport Lake.

Have there been any controversial issues on the lake?
Some unauthorized gate closures have occurred during past drawdowns. The closures involved unknown persons. LADOTD reopened the gates after clearing debris from the structure. An unauthorized gate closure negatively impacted the year 2001 drawdown by reducing the exposure time required for reducing bottom sediments and vegetative coverage.

On several occasions questions have arisen regarding ownership of the lake bottom. Past recommendations by LDWF have included clearing timber from the lake. These recommendations have not been followed due to the fact that much of the lake bottom and the associated timber are owned by private individuals.

Ownership of the water within the lake has become relevant in recent years due to interest in water sales marketed to drilling companies. Local residents and local governing bodies have interest in such sales. The water within the lake is state property.

Some controversy has always existed regarding funding for maintenance of this lake and its control structure. The lake would benefit greatly from renovation of the lakebed and repair of the control structure. The Bayou Pierre Game and Fish Commission along with the DeSoto Parish Police Jury, shoreline property owners, anglers and hunters have been involved with this issue for many years. To date no resolution to the problem has been found.

Aquatic Vegetation Status:

Clear Smithport Lake has been extensively covered by giant salvinia in recent years. This prolonged coverage has greatly reduced submerged aquatic vegetation in the lake.

Recent efforts by LDWF to remove debris from the control structure at Clear Smithport have allowed flushing of giant salvinia and other floating species by rain events in 2012.

As of January 1, 2013 the total infestation of the major problem plant species at Clear Smithport Lake was estimated to be as listed below:
Giant salvinia *(Salvinia molesta)* – 800 acres
Sedge *(Cyperus ssp.)* – 300 acres
Water hyacinth *(Eichhornia crassipes)* – 15 acres
Pennywort (*Hydrocotyle spp.*) – 10 acres

Total vegetative coverage = 1,125 acres or 37%

It is expected that giant salvinia will expand exponentially during the growing season of 2013. Vegetation mats are expected to remain and/or increase during the coming year.

Limitations:

- Watershed ratio of 43:1 limits the use of whole-waterbody herbicide treatments to summer season.
- Dense coverage of cypress and tupelo trees (>75%) restricts boat-based foliar applications.
- Shallow water requires the use of surface drive boats to gain access to problem areas.
- Limited regulatory factors exist which would limit LDWF's vegetation control efforts at Clear Smithport Lake. The BPGFPC and shoreline property owners are cooperative with LDWF in its efforts on this waterbody. However, DeSoto Parish is located within the Louisiana Department of Agriculture and Forestry's (LDAF) 2,4-D waiver area. A waiver is needed to apply 2,4-D between March 15th and September 15th of each year.
- Shoreline development is present in the form of residences and camps on less than 10% of the lake shoreline.

Past Control Measures

Annual herbicide applications have been made at Clear Smithport Lake for many years. Details regarding acres treated and vegetation types targeted over the past seven years appear in Table 2.

Table 2. Herbicide applications at Clear Smithport Lake, LA 2006 – 2012

Year	Acres Treated	Vegetation
2006	179	Alligator Weed, Primrose, Water Hyacinth
2007	0	
2008	483	Alligator Weed, Giant Salvinia, Pennywort, Water Hyacinth
2009	1,974	Alligator Weed, Giant Salvinia, Pennywort, Water Hyacinth
2010	2,300	Alligator Weed, Duckweed, Pennywort, Primrose, Giant Salvinia, Water Hyacinth
2011	522	Alligator Weed, Pennywort, Giant Salvinia, Smartweed
2012	904	Giant Salvinia, Sedge, Alligator Weed, Pennywort

Historically, chemical treatments of water hyacinth along with associated alligator weed and pennywort, have consisted of foliar applications of 2,4-D at a rate of 0.5 gallons per acre. Alligator weed and pennywort found independent of other vegetation have been treated with foliar applications of glyphosate at a rate of 0.75 gallons per acre. Giant salvinia has primarily been treated with foliar applications of diquat at a rate of 0.75 gallons per acre. All foliar applications have included a nonionic surfactant at 0.25 gallons per acre.

Giant salvinia weevils (*Cyrtobagous salviniae*) have been introduced at Clear Smithport Lake to provide a biological control agent for giant salvinia. Dates of weevil releases appear in Table 3.

Table 3. Salvinia weevil releases at Clear Smithport Lake, LA.

Year	Weevil Species	Amount Released
2008	Giant salvinia weevils *(Cyrtobagous salviniae)*	9,700 individuals
2009	Giant salvinia weevils (*Cyrtobagous salviniae*)	34 ft ^{3} of host plant
2011	Giant salvinia weevils (*Cyrtobagous salviniae*)	4,800 individuals
2012	Giant salvinia weevils (*Cyrtobagous salviniae*)	32,700 individuals

Physical control measures utilized at Clear Smithport have consisted of drawdowns and surface skimming techniques and have generally provided good results.

During the year of 2012, LDWF staff made a concerted effort to clear debris, logs and plant growth from the spillway crest at Clear Smithport Lake. This yearlong effort resulted in better flushing of matted vegetation from the lake and allowed at least temporary open water areas. In the absence of an operational control structure, such efforts are among the very few options available to facilitate physical control of aquatic vegetation at this waterbody.

Recommendations:

A comprehensive vegetation control plan is recommended for Clear Smithport Lake to include chemical, biological and physical control measures.

Continued foliar herbicide applications are recommended for Clear Smithport Lake. These applications will be principally directed toward control of giant salvinia *(Salvinia molesta),* water hyacinth *(Eichhornia crassipes),* and pennywort (*Hydrocotyle spp.*) but will also include control of any floating or emergent vegetation as needed.

Giant salvinia will be treated by foliar applications of a mix of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred surfactants (8 oz/acre) from April 1 to October 31. Outside of that time period, diquat at a rate of 0.75 gallons per acre will be used with 0.25 gallons per acre of a non ionic surfactant. Pending issuance of a waiver from LDAF, water hyacinth and pennywort will be treated by foliar application of 2,4-D herbicide at a rate of 0.5 gallons per acre. All foliar applications should be made to the greatest extent possible within manpower and equipment limitations.

Releases of giant salvinia weevils (*Cyrtobagous salviniae*) will be continued. Weevil releases will focus on areas with limited access by spray vessels.

Triploid grass carp *(Ctenopharyngodon idella)* are not recommended at this time for the control of submerged aquatic vegetation due to the current excessive coverage of floating vegetation which serves to limit the submerged growth. Future stockings of triploid grass carp will be considered if determined as necessary.

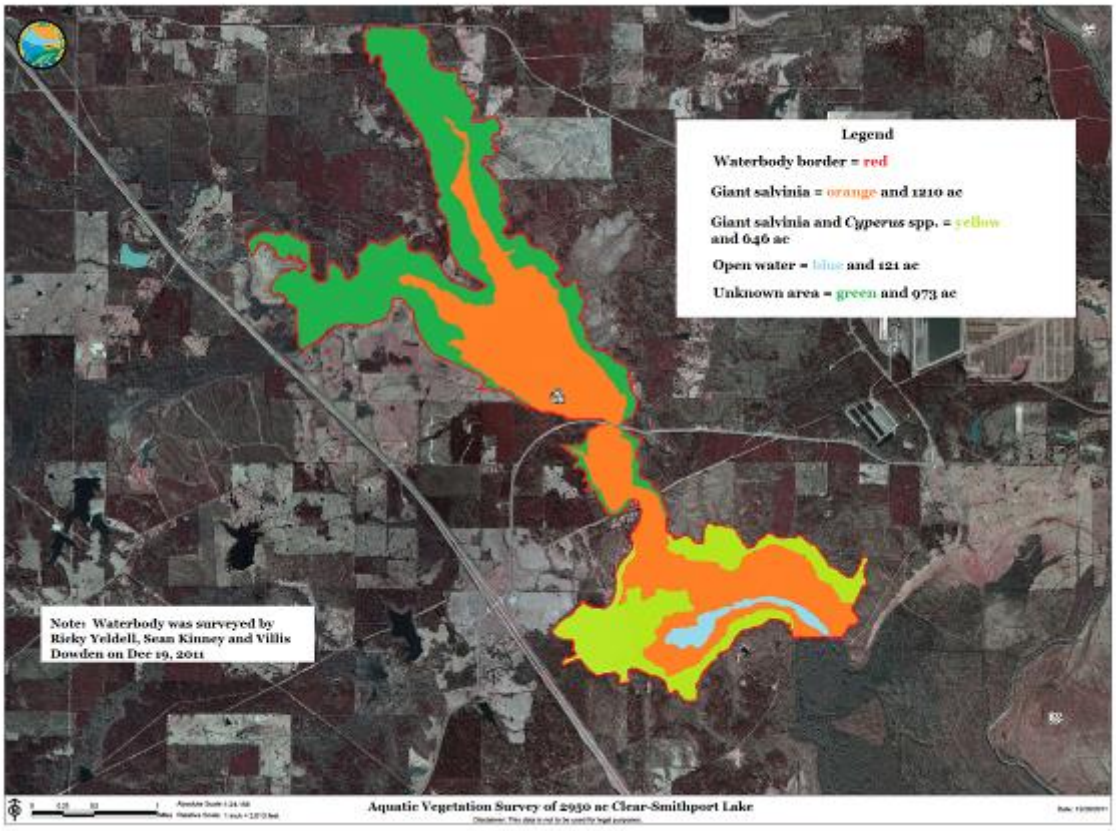
Drawdowns for vegetation control are recommended when coverage of submerged and floating aquatic vegetation exceeds 60% of total lake acreage. Drawdown period should be September 1 to January 1of the following year. Drawdown rate should be 3 – 4 inches per day. Drawdown level should be 127.6 MSL for a reduction of 4 feet below pool level. This level represents the maximum reduction allowed by the control structure and assumes the structure to be operational. A two year successive drawdown schedule is recommended. The action will achieve reduction in both vegetative coverage and organic sediment. It is likely that three years of successive drawdowns may be required to reduce problematic vegetation and sediment in this waterbody. Typemapping of aquatic vegetation will be used to determine vegetative coverage prior to scheduled drawdowns. Post-drawdown typemapping will be used to assess drawdown efficacy.

Repairs should be made to the existing structure to facilitate dewatering of the lake. Discussions should resume between LDWF, BPGFPC, the DeSoto Parish Police Jury and LDOTD to accomplish repair and/or renovation of the existing control structure, as well as renovation of the lakebed to allow more effective management of this waterbody. LDWF is currently attempting to contact the aforementioned parties to schedule a meeting for the month of March, 2013. This plan will be presented at that meeting.

As far back as 1971, LDWF biologists have recommended reducing the cypress and tupelo

tree forest found in Clear Smithport Lake. Discussion of this topic between LDWF and interested parties should resume to determine feasibility.

Figure 1. Aquatic Plant coverage on Clear Smithport Lake as of December 2011.



Type mapping has been conducted at Clear Smithport Lake in years 1993 and 2000. Vegetation surveys were conducted in years 1982, 1990, 1992, 1993, 1994, 1995, 1998, 1999, 2000, 2001, 2011 and 2012.